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Electron-impact dissociative excitation of O_2: Kinetic energy distribution of fast oxygen atoms — •OLEG MAKAROV, JOSEPH AJELLO, ISIK KANIK, CRAIG NOREN, and PHILIP MCCARTNEY — Jet Propulsion Laboratory, 4800 Oak Grove Rd., Pasadena CA 91109

The kinetic energy distribution of oxygen atoms resulting from electron-impact dissociation of O_2 has been measured. A high-resolution vacuum ultraviolet spectrometer was employed for the measurement of the O I (115.2, 130.4, 135.6 nm) fine structure emission lines profiles at 35 and 100 eV electron impact energies. The deconvolved line profiles of atomic oxygen reveal the existence of a broad line profile ($\sim$ 30–40 mÅ FWHM) produced from a combination of dissociative excitation and dissociative ionization excitation processes. The atomic oxygen kinetic energy distributions at 100 eV electron impact energy spans the energy range from 1–10 eV with a peak value near 1 eV. The excitation functions of O I (115.2, 130.4, 135.6 nm) were measured in the vicinity of threshold from 14 eV to 50 eV.

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